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TRANSMITTAL OF APPEAL BRIEF (Large Entity)	Docket No. ITL.0561US

OIPE JAN 2 1 2005 JC32 PATENT & TRADEMARK OFFICE

In Re Application Of: **Michael Kozhukh**

Application No.	Filing Date	Examiner	Customer No.	Group Art Unit	Confirmation No.
09/842,935	**April 26, 2001**	**Audrey Y. Chang**	**21906**	**2872**	**1185**

Invention: **Highly Reflective Optical Components**

COMMISSIONER FOR PATENTS:

Transmitted herewith is the Appeal Brief in this application, with respect to the Notice of Appeal filed on **November 18, 2004.**

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Signature

Dated: **January 18, 2005**

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:	Michael Kozhukh	§	Art Unit:	2872
Serial No.:	09/842,935	§	Examiner:	Audrey Y. Chang
Filed:	April 26, 2001	§		
Title:	Highly Reflective Optical Components	§	Docket No.:	ITL.0561US (P11332)
Customer No.:	21906	§	Confirmation No.:	1185

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APPEAL BRIEF

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Ellen Peacock

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REAL PARTY IN INTEREST

The real party in interest is the assignee Intel Corporation.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences known at this time.

STATUS OF CLAIMS

Claims 1-3	Rejected
Claims 4-7	Canceled
Claims 8-11	Rejected
Claim 12	Canceled
Claim 13	Rejected
Claims 14-15	Canceled
Claims 16-17	Rejected
Claims 18-22	Canceled
Claims 23-24	Rejected
Claims 25-30	Canceled

Claims 1-3, 8-11, 13, 16-17, and 23-24 have been finally rejected and are the subject of this appeal.

STATUS OF AMENDMENTS

No amendments have been filed subsequent to the final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

Referring to Figure 1, a silicon wafer or other substrate 16 may be coated with a layer 14 of silver, a layer 12 of silicon dioxide and a layer 10 of silicon nitride. The layer 14 provides high reflectivity. The layers 10 and 12 may provide isolation from liquid crystal materials in those applications where it is desired to separate the reflective material from a liquid crystal material. Specification, page 2, line 24 - page 3, line 6.

In one embodiment, each of the layers 10 and 12 may have a thickness of about 700 to about 750 Angstroms. Advantageously, the layers 10 and 12 are deposited using chemical vapor deposition techniques at temperatures not higher than 250°C. The use of relatively low temperature deposition techniques (normal deposition techniques may involve temperatures of 400°C) may be effective to form layers with relatively small grain sizes. Specification, page 3, lines 15-22.

Referring next to Figure 4, as would be expected, coating the silver films with silicon dioxide plus silicon nitride decreases the reflectivity of the resulting composite. However, this may be necessary in some applications involving liquid crystal materials. What is more interesting though is the blue shift that occurs when using silver covered by 750 Angstroms of silicon dioxide and 750 Angstroms of silicon nitride.

The peculiar drop in the reflectivity of blue light is particularly noticeable compared to the results for silver covered by 3000 Angstroms of silicon dioxide. Clearly, the inclusion of silicon nitride in the overcoating has a dramatic (negative) effect on the reflection of blue light. In addition, the use of two relatively thin insulator layers with relatively small grain sizes may contribute to the blue shift. Specification, page 4, line 13 - page 5, line 2.

At this point, no issue has been raised that would suggest that the words in the claims have any meaning other than their ordinary meanings. Nothing in this section should be taken as an indication that any claim term has a meaning other than its ordinary meaning.

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The grounds of rejection asserted in the final Office action, which is dated August 26, 2004, and to be reviewed on appeal, are as follows:

1. Claims 1-3, 16-17 and 23 were rejected under 35 U.S.C. §103(a) as being unpatentable over Li (US 5,619,059) in view of Oyama (US 6,572,990).

2. Claims 8-11 and 13 were rejected under 35 U.S.C. §103(a) as being unpatentable over Li (US 5,619,059) in view of Iacovangelo (US 6,587,263).

3. Claim 24 is rejected under 35 U.S.C. §103(a) as being unpatentable over Li (US 5,619,059) in view of Oyama (US 6,572,990) as applied to claim 16 above, and further in view of Iacovangelo (US 6,587,263).

ARGUMENT

1. 35 U.S.C. §103(a)—Alleged Unpatentability Over Li In View of Oyama

A. Claims 1-3, 16-17, and 23.

Independent claims 1 and 16 are not obvious over Li in view of Oyama. To establish *prima facie* obviousness under § 103(a), the examiner must show that some objective teaching, suggestion or motivation in the applied prior art taken as a whole and/or knowledge generally available to one of ordinary skill in the art would have led that person to the claimed invention as a whole, including each and every limitation of the claims, arranged as required by the claims, without recourse to the appellant's disclosure. *See generally, In re Rouffet*, 149 F.3d 1350, 1358, 47 U.S.P.Q.2d 1453, 1458 (Fed. Cir. 1998); *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000). Also, an obviousness rejection cannot be predicated on the mere identification of individual components of claimed limitations; particular findings must be made as to the reason the skilled artisan, with no knowledge of the claimed invention would have selected the components for combination in the manner claimed. *In re Kotzab*, 217 F.3d 1365, 1371, 55 U.S.P.Q.2d 1313, 1317 (Fed. Cir. 2000).

The inventor of the present invention has found that two relatively thin layers, one of silicon dioxide and the other silicon nitride, deposited at low temperatures produces a blue shift or a selective drop in the reflectivity of blue light. As shown in Figure 4 of the present application, the blue shift is particularly noticeable in comparison to silver covered by 3000 Angstroms of silicon dioxide. The small grain size of the two insulators may contribute to the blue shift.

Reducing the reflection of blue light, in particular, from a reflective surface may be advantageous in many applications. For example, many lamps utilized in connection with projection displays over produce blue light relative to other visible light wavelengths. In other words, the light produced has a spectra that includes more blue light than normal ambient light. This imbalance may be corrected by using a reflector that produces a blue shift. The result of using a reflector including a coating of silicon nitride may be to reduce the amount of reflected blue light and to thereby automatically

rebalance the spectra of the lamp or light source. The obviousness of an absorbing layer including thin layers of silicon dioxide and silicon nitride that selectively absorbs blue light is not believed to be taught or suggested by Li in view of Oyama.

Li fails to disclose an absorbing layer that includes both silicon dioxide <u>and</u> silicon nitride. For example, the transparent layer 28 (and where provided 32) of Li can be a dielectric material selected from a group including many dielectrics. *See* column 6, lines 52-57. But, silicon dioxide and SiN are merely included in the list of dielectrics; there is no indication in Li that both dielectric materials are used in the same color coating. For example, referring to Tables I and II, the only dielectric that Li uses in his examples is silicon dioxide. Also, the absorbing layers 30 and 32 are a metal, metal alloy, or semiconductor material. Column 6, lines 58-62. (There appears to be typographical error in designating 20 as an absorbing layer. *See, e.g.,* column 5, lines 44-51).

Because Li fails to specifically disclose the materials arranged as claimed, the examiner's contention is analogous to an "obvious to try" standard, which is not the standard for obviousness. *See, e.g., In re Fine*, 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988); *In re O'Farrell*, 853 F.2d 894, 903, 7 U.S.P.Q.2d 1673, 1681 (Fed. Cir. 1988). In other words, Li does not indicate what materials are critical or which of the possible choices are likely to be successful. This lack of suggestion falls under the erroneous "obvious to try standard". *In re O'Farrell*, 7 U.S.P.Q.2d at 1681. Therefore, Li fails to specifically disclose an absorbing layer that includes both silicon dioxide and silicon nitride.

Also, Li does not implicitly show selective absorption of blue light. For example, referring to Figures 3 and 5 of Li, reflectance curves for red, green, and blue color coatings are shown. None of these curves have the same pattern of reflectivity that is observed in some embodiments of the present invention. *Compare* Figure 4. Thus, it is respectfully submitted that Li does not implicitly disclose the selective absorption of blue lights as claimed in claims 1 and 16.

Li does not teach or suggest an absorbing layer including about 700 to about 750 Angstroms of silicon dioxide and about 700 to about 750 Angstroms of silicon nitride.

Office action, page 3. While Li does indicate that a desired performance such as a particular reflected color may be obtained by varying the thickness of the layers, the thickness of Li's silicon dioxide layers are much greater than 700 Angstroms to 750 Angstroms. *See* Tables I and II. In fact, Li has designed the color coatings shown in Tables I and II to match the Commission Internationale de L'Eclairage (CIE) coordinates of CRT phosphors and the National Television System Committee (NTSC) standards respectively. Column 7, lines 29-42. *See also* Tables I and II, and Figures 4 and 6. In view of Li's desire for good color performance and the examples given that obtain good color performance it is respectfully submitted that the teachings of Oyama would not motivate one to make the specific combination of claims 1 or 16.

For example, the silicon dioxide layers of Li are generally thicker than the layers of Oyama. In fact, only the blue color coating of Li has a single silicon dioxide layer having a thickness comparable to that of Oyama's; Li's red and green color coatings include silicon dioxide layers that are much thicker than Oyama's silicon dioxide layer. *See* Tables I and II. But, Li's blue color coating reflects blue light. *See* Figure 5 at 50c. It is respectfully submitted that in a color coating designed to reflect blue light, the absorption of blue light would be an undesired effect. Thus, there is no motivation to decrease the thickness of Li's silicon dioxide layer when thinner silicon dioxide layers are designed by Li to reflect blue in accordance with current standards. In other words, because the thicknesses of the silicon dioxide layers disclosed by Li are much greater than the claimed thicknesses and because the only comparable thickness of silicon dioxide layers in Li and Oyama is in a coating that reflects blue light, Li teaches away from a decreased layer thickness and/or there is no suggestion or motivation to decrease the thickness of Li's layers to the claimed thicknesses.

Also, there is no suggestion or motivation to modify Li to specifically include a silicon nitride layer in combination with a silicon dioxide layer in view of Oyama. For example, Oyama's transparent film is from 40 nm to 80 nm thick. Column 4, lines 29-32. But, none of Li's silicon dioxide layers are this thin. Also, Oyama's transparent layer has adequate transparency in the visible light region with an extinction coefficient at a

wavelength of 550 nm. Column 7, lines 11-17. Thus, Oyama's nitride layer absorbs green light. Taken together, it is respectfully submitted that the examiner has failed to show that Li or Oyama disclose an absorbing layer that selectively absorbs blue light, or that there is a suggestion or motivation to modify Li in view of Oyama to include an absorbing layer having silicon dioxide and silicon nitride layers in the claimed dimension.

In other words, there is no reason to conclude that the references, even if combined, would teach the selective absorption of blue light. Certainly it is not inherent in the references since they need not necessarily have the claimed structure. Absent some teaching that Oyama or Li have the claimed absorbing layer there is no reason to presume that the references disclose selective absorption of blue light when no such capability in the absorbing layers is anywhere suggested. Reversal of the rejections is requested.

2. *35 U.S.C. §103(a)—Alleged Unpatentability Over Li In View of Iacovangelo.*

A. Claims 8-11 and 13.

Independent claim 8 was rejected as being unpatentable over Li in view of Iacovangelo. It is respectfully submitted that *prima facie* obviousness has not been established with respect to claim 8.

As explained above in section 1.A., Li does not expressly or implicitly disclose the selective absorption of blue light. Also, it was explained above that merely listing many different dielectric materials is not suggestive of an absorbing layer including two specific materials. *See* Li, column 6, lines 52-57. This is especially true in view of Li's preferred use of silicon dioxide, the only dielectric used in the coatings listed in Tables I and II. *See* column 6, lines 63-65.

Li does not explicitly teach forming a coating at a temperature of less than 250 °C. Final Office action, page 5. Deposition at this temperature is not inherent. To be inherent the missing matter must necessarily be present in the thing described in the reference. *In re Robertson*, 169 F.3d 743; 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999).

The examiner has not shown why deposition must necessarily occur in Li at 250 °C. Rather, she relies on Iacovangelo to support an assertion of obviousness.

There is no suggestion or motivation to modify Li in view of Iacovangelo. For example, in some embodiments of Iacovangelo a single, thick (about 16 μm) radiative layer of silicon dioxide or silicon oxynitride is deposited using PECVD processes. But, these layers exhibit absorption at about 380 nm. *See* column 5, lines 43-50; column 6, lines 49-65; Figures 4 and 5. To cure this negative effect, Iacovangelo deposits a thick (about 17 μm) radiative layer having one or more layers of modulated $SiO_2/SiO_xN_y/Si_3N_4$ using the PECVD process. In this way, the absorption around 380 nm is minimized. *Id. See also* column 6, lines 36-43. Because Iacovangelo's modulated radiative layer is very thick and decreases absorption in the visible range, especially around 380 nm, Iacovangelo teaches away from an absorption layer that selectively *absorbs* blue light. In other words, Iacovangelo teaches away from the present invention. Where a reference discourages one to search for a new invention the new invention may not be obvious. *United States v. Adams*, 383 U.S. 39, 52, 148 U.S.P.Q. 479, 484 (1966) ("[k]nown disadvantages in old devices which would naturally discourage the search for new inventions may be taken into account in determining obviousness."). In fact, teaching away from a claimed invention may be an indicator of unobviousness. *Id. See also, In re Fine,* 837 F.2d 1071, 1075, 5 U.S.P.Q.2d 1596, 1599 (Fed. Cir. 1988). Accordingly, there is no suggestion or motivation to modify Li in view of Iacovangelo and the references do not disclose all of the limitations of claim 8. For at least these reasons, *prima facie* obviousness has not been established with respect to claim 8. Reversal of the rejection is requested.

3. 35 U.S.C. §103(a)—Alleged Unpatentability Over Li In View of Oyama And Further In View of Iacovangelo.

A. Claim 24.

Claim 24 was rejected as being obvious over Li in view of Oyama and in further view of Iacovangelo. There is no suggestion or motivation to modify Li or Oyama in view of Iacovangelo.

As explained above in section 2.A. of the Arguments section, Iacovangelo teaches away from the present invention. Where a reference teaches away from a claimed invention, the claimed invention may not be obvious. *In re Adams*, 383 U.S. at 52, 148 U.S.P.Q. at 484; *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1550, 220 U.S.P.Q. 303, 311-313 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984).

For example, when Iacovangelo deposits a modulated radiative layer which may include $SiO_2/SiO_xN_y/Si_3N_4$ and is about 16.8 μm thick, the modulated layer, *decreases* absorption, especially at 380 nm. *See* column 6, lines 47-65. In contrast, the absorbing layer of claim 24 selectively absorbs blue light. Also, the absorbing layer of claim 24 is very thin in comparison to that of Iacovangelo. Thus, a suggestion or motivation to combine the teachings of the references such that it would be obvious to include every limitation arranged as claimed is lacking. Reversal of the rejection is requested.

CONCLUSION

As discussed above in the Arguments section of this appeal brief, the references do not teach all of the limitations of the contested claims and there is no suggestion, teaching, or motivation of the desirability to do what the applicant has done. Thus, *prima facie* obviousness has not been established; reversal of the rejections and allowance of the application is requested.

Respectfully submitted,

Date: January 18, 2005

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CLAIMS APPENDIX

1. A reflector comprising:

a reflective layer; and

an absorbing layer to selectively absorb blue light, said absorbing layer being located over said reflective layer, said absorbing layer including about 700 to about 750 Angstroms of silicon dioxide and about 700 to about 750 Angstroms of silicon nitride.

2. The reflector of claim 1 wherein said reflector is a micromirror.

3. The reflector of claim 1 wherein said reflective layer is formed of silver, said silver being formed over a polished semiconductor material.

8. A method comprising:

forming a reflective layer; and

forming an absorbing layer, including oxide and nitride layers, over said reflective layer at a temperature of less than 250°C so that said layers selectively absorb blue light.

9. The method of claim 8 including forming the reflective layer by depositing silver directly on a semiconductor layer.

10. The method of claim 8 including forming an absorbing layer including a layer of two different insulator materials.

11. The method of claim 9 including forming said silver layer at a temperature of 50°C or less.

13. The method of claim 8 including forming said absorbing layer using chemical vapor deposition.

16. A reflector comprising:

a silicon substrate;

a silver layer formed directly on said silicon substrate; and

an absorbing layer over said silver layer, said absorbing layer including about 700 to 750 Angstroms of silicon dioxide and from 700 to about 750 Angstroms of silicon nitride, said absorbing layer selectively absorbing blue light.

17. The reflector of claim 16 wherein said reflector is a micromirror.

23. The reflector of claim 16 wherein said silver layer is formed at a temperature below 50°C.

24. The reflector of claim 16 wherein said absorbing layer is formed at a temperature below 250°C.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.